

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION.

### Machine for Cutting Pieces of Cardboard or like Material into Match Splints in Comb-like Formation.

I, JOHN FEIGENBAUM, of 59, Boschuil-  
laan, Deurne-Nord, Belgium, a citizen of  
the Russian Republic, do hereby declare  
the nature of this invention and in what  
manner the same is to be performed, to  
be particularly described and ascertained  
in and by the following statement:—

The present invention relates to a  
machine for cutting strips of cardboard or  
the like material into splints of matches  
known in the trade as combs of matches.

It has been proposed to construct paper  
shredding or comminuting machines in  
which the paper is engaged between two  
oppositely rotating cutting rollers bear-  
ing cutting discs meshing with each other,  
so as to operate a shearing action.

The present invention consists in a  
machine based on the same principle,  
different new and valuable features being  
applied for cutting the strips of deter-  
mined width in match splints of comb-  
like formation.

In conformity with the present inven-  
tion, the cutting discs forming the cutting  
rollers present corresponding peripheral  
interruptions or notches, cooperating for  
leaving an uncut portion on the strip of  
cardboard passing through the machine.  
Comb-shaped elements are arranged close  
to the cutting rollers, so that their teeth  
are arranged to bend the splints formed in  
the strips of cardboard, alternately out-  
wards with respect to the uncut portion of  
the strip.

The strips are fed to the machine by  
means of a reciprocating feed device,  
adjustable with respect to the width  
and/or the length of the strips of card-  
board.

The periphery and/or faces of the cut-  
ting discs will be slightly concave to effect  
a perfect shearing action. The cutting  
discs are eventually provided with devices  
cutting mortises or slots at given points  
in the uncut portion of the cardboard  
strip, or otherwise for cutting off a splint  
after every ten or any other number of  
splints.

The machine is driven by any con-  
venient driving means.

The invention will be described here-  
after with reference to the figures of the  
[Price 1/-]

accompanying drawing.

Fig. 1 is a front view of the cutters and  
the driving mechanism for same;

Fig. 2 is a lateral sectional view through  
the cutters, on line A—B of fig. 1;

Fig. 3 is a diagrammatic plan view of  
a feed device for the strips of cardboard  
towards the cutters illustrated on fig. 1;

Fig. 4 is a front view of a piece of card-  
board cut into match splints;

Fig. 5 is a side view of same;

Fig. 6 is a front view of a strip of card-  
board into which two rows of match  
splints have been cut;

Fig. 7 is a front view of a long strip of  
cardboard cut into match splints, showing  
arrangements whereby said strips may be  
easily severed into a number of shorter  
strips.

With reference to these figures, it will  
be seen on fig. 1 that the machine com-  
prises two parallel shafts 1, which may be  
threaded as illustrated, but which may  
also be smooth. A number of cutters 3  
are mounted on both said shafts, either by  
means of a key 5, as illustrated on fig. 2,  
or by any other appropriate means, so as  
to form cutting rolls of substantial length.  
The cutting discs 3 of both rolls mesh with  
each other so as to operate with a shearing  
action, said discs 3 being spaced apart by  
discs 4 of smaller diameter. The cutting  
discs 3 have a peripheral interruption or  
notch 18, the interruptions in two adja-  
cent discs cooperating to leave an uncut  
portion on the strip of cardboard passing  
between the rolls. The periphery of the  
discs 3 and/or their faces may be slightly  
concave, so as to provide sharp edges  
facilitating the cutting operation. The  
shafts 1 may be driven in any convenient  
way, so as to rotate in opposite directions,  
as for instance by means of the driving  
pulley 6 keyed on a shaft 7, which rotates  
shafts 1 through the medium of the  
spur gears 8, 9, 10 and 11.

The strips of cardboard or like material  
having the convenient width and length  
are supported by a reciprocating feed  
table, the reciprocating movement of  
which will be obtained, for instance, by  
means of an eccentric and connecting rod  
arrangement and guiding means, not  
illustrated in the drawing. This feed

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table 12 has adjustable abutments, such as a slot and pin arrangement illustrated in fig. 3, to adjust the feed device relatively to the width of the strip to be pushed in the machine.

It is obvious that the width of the strip will be greater than the length of the cutting portion of the discs 3, so that the strip passing between the cutting rollers will only be cut up to a certain depth. The width of the strip can, however, be so selected that splints are cut on both edges of the strip, as illustrated in fig. 6, said splints being arranged on both sides of an uncut middle portion.

It must be understood that the amplitude of the reciprocating movement of the feed device 12 wants to be adjusted relatively to the width of such strip. The central uncut portion of the strip corresponds to the interruption or notch 18.

With the device according to the invention, feed devices 12 of various lengths may be used for supporting strips of cardboard of any required length ranging from the total length of the cutting rolls 2 to the shortest length which may be desired. The position of the feed device 12 in relation to one end of the cutting rolls 2 may be adjusted, for instance by means of the following device: guide-bars 13 provided on one or both sides of the element 12 are capable of shifting a plate 14 in two opposite directions, indicated by the arrows on fig. 3, but not in directions at right angles to said arrows, i.e. the directions along which the element 12 is adapted to reciprocate, said plate 14 being arranged to shift the element 12 in such a way as to bring it nearer or move it away from the upright or frame-member 15. The guide-bars 13 may be conveniently threaded as at 16, for this purpose.

After each complete stroke of the reciprocating movement of the feed device 12, the strips of cardboard or like material will be cut into a number of match splints equal to the number of cutters which have come in contact with said strip, which will then have the appearance illustrated on figs. 4 and 5.

In single comb formation, the match splints are alternately bent outwards with respect to the uncut portion of the strip as illustrated on fig. 5, by means of comb-shaped elements, two teeth 17 of which are illustrated on fig. 2. The comb-shaped elements have their teeth 17 curved and arranged with their ends close to the spacing discs 4, so that the cut splint of cardboard will engage between the discs 4 and the teeth 17. When the strip is expelled from between the cutting rollers by the action of the cooperating notches in the

cutting discs upon the uncut portion of the strip, a lateral shifting movement of the strip manually operated will disengage the strip from the comb-shaped elements, the teeth 17 of which are sufficiently spaced apart for allowing an easy passage of the cut splints between them.

The cutters may also be provided with a device for making a mortise or slot in the strip of cardboard, as illustrated at 19 on fig. 7, in such a way that by bending the strip of cardboard along the line of slotting, it will be easily torn. Another means for providing for an easy severing or tearing of the strip of cardboard may consist of cutting off a splint 20 after every ten or any other number of splints.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1.—A machine for cutting strips of cardboard or like material into match splints in comb-like formation, comprising two oppositely rotating cutting rolls bearing cutting discs meshing with each other so as to operate with a shearing action, characterized by the fact that the cutting discs present corresponding peripheral interruptions or notches cooperating for leaving an uncut portion on the strip of cardboard or like material.

2.—A machine as claimed in claim 1, comprising a pair of comb-shaped elements the teeth of which are arranged to bend the splints formed in the strips of cardboard alternately outwards with respect to the uncut part of the strip.

3.—In a machine as claimed in claims 1 and 2, a reciprocating feed device adjustable with respect to the width and/or the length of the strip of cardboard, substantially as described.

4.—A machine as claimed in claims 1 to 3, characterized by the fact that the periphery and/or faces of the cutting discs are slightly concave, for the purpose specified.

5.—A machine for cutting strips of cardboard or like material into match splints, as claimed in any of the foregoing claims, and in which the cutters are provided with devices for making mortises or slots at given points of the uncut portion of the piece of cardboard or like material, or are provided with means for cutting off a splint after every ten or any other number of splints substantially as and for the purpose described.

6.—A machine for cutting strips of cardboard or like material into match splints, constructed, arranged and work-

ing substantially as described with reference to the figures of the accompanying drawing.

COPE & Co.,  
Agents for the Applicant,

Dated this 8th day of November, 1929. 65, Victoria Street, Westminster, S.W. 1.

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[This Drawing is a reproduction of the Original on a reduced scale.]

